

Title¹

STACKABLE BOX FOR PERISHABLE PRODUCTS²

D E S C R I P T I O N³

CROSS REFERENCE TO RELATED APPLICATIONS⁴

[⁵0001⁶]⁷ The present application is based on, and claims priority from, International Application Number PCT/ES2002/00530, filed November 14, 2002, the disclosure of which is hereby incorporated by reference herein in its entirety.⁷

OBJECT⁸ **BACKGROUND**⁹ OF THE INVENTION¹⁰

Field of the Invention¹¹

[¹²0002¹³]¹⁴ The present invention ~~refers~~¹⁵ relates¹⁶ to a stackable box for perishable products, made from a sheet of compact cardboard with stamped, cutting and folding lines for assembly purposes, although it may also be made up of five separate pieces of the same material, likewise with cutting, stamped and folding lines, for being glued together so as to be able to make up the box.¹⁸

~~The object of~~¹⁹ [²⁰0003²¹]²² More specifically,²² the invention is²³ directed²⁴ to provide a box for perishable goods of the above-mentioned type, provided with triangular prismatic reinforcements in the corners with upper protruding flanges in the corners, all configured in such a way in its conformation the box offers high compression strength at these upper flanges, as a result of which, besides obtaining reinforcement at every corner, reinforcement of these protruding flanges is also obtained.²⁵

BACKGROUND²⁶ ~~**OF THE INVENTION**~~²⁷

Description of the Related Art²⁸

[²⁹0004³⁰]³¹ PCT/ES 9825830 describes a stackable box for transporting perishable products and the like, which is made up of five separate parts forming the bottom, the sides and the fronts, these having transverse folds at their ends to conform triangular prismatic reinforcements at the actual corners when assembling.³² In this box stacking stability is achieved by means of double and triple flanges provided at the upper edge of the walls

corresponding to those prismatic corner reinforcements, flanges that are housed in respective windows provided for the purpose at the bottom.³³

~~We may also cite~~³⁴ I 0005³⁶ ~~Spanish utility model U200101538,~~³⁷
³⁸ ~~referring~~³⁹ discloses⁴⁰ to a stackable tray for perishable products, which, in this case, is obtained from the development of a single sheet whose fronts are provided at their end sections with transverse folding lines for forming triangular prismatic reinforcements at the actual corners, while also having protruding upper flanges that are accommodated in windows made for the purpose in the bottom so as to achieve stability and the proper positioning of the stacked boxes.⁴¹

I 0006⁴² ~~Both in one case and the other, i.e. whether the box is made from five separate pieces, as happens in PCT/ES 98/25830, or as in utility model U200101538, where the box is made from a single piece, the flanges provided at the top of the corners to achieve the stability and correct positioning between boxes when stacking always match up with the upper edges close to the sharp corners of the box, which gives rise to constant rubbing, bending, etc, of these flanges, resulting in a loss of strength, damage and, therefore, and their possible unserviceability, so that they do not effectively perform the function for which they are intended.~~⁴⁵

DESCRIPTION⁴⁶ SUMMARY⁴⁷ OF THE INVENTION⁴⁸

I 0007⁴⁹ ~~The box being advocated, which may either be made out of a single sheet stamped, cutting or folding lines or from five separate pieces, also with pre-perforation, folding or cutting lines, offers a series of improvements in the extensions that will be formed by the prismatic corner reinforcements with a view, not only to achieving considerable strength in box stacking, but also substantial reinforcement in the actual upper flanges, as these are related in such a way that in the making or assembly of the box they are located away from the edges and corners of the box, and in addition they form flanges that are disposed at right angles to one another, which endows them with great stacking compression strength, besides tighter fitting between stacked boxes and a reduction in the number of flanges to be engaged for anchoring purposes during stacking.~~⁵²

I 0008⁵³ ~~More specifically, the box of the invention is~~⁵⁵ characterised in that the extensions projecting from the fronts to form the prismatic corner reinforcements present,

after an initial folding line, four transverse folding lines defining five sectors, which are folded one after another, one of them abutting onto the inside face of the respective side, while the second sector is arranged diagonally in the respective corner and the third sector is up against the inner face of the front end. The fourth⁵⁷ sector is arranged diagonally in that corner, i.e. between the inner edge or dihedral angle formed by the first sector and the front end and the diagonally disposed sector, whilst the last sector is up against an inner face of the diagonally disposed sector, both folded to one side and to the opposite side, forming two triangular compartments in the triangular configuration defined by the first three sectors.⁵⁸

[⁵⁹0009⁶⁰]1⁶¹ In addition, the diagonally disposed sector presents a flange at its top edge, while the last two sectors present a common flange with one part on one side of the folding line defining these two sectors and the other part on the other side, so that during assembly by folding two flanges are determined which will be disposed at right angles to each other, one of which will be at right angles to the flange of the diagonally disposed sector, while the other is up against the half of that diagonally disposed sector flange.⁶²

[⁶³0010⁶⁴]1⁶⁵ In this way, a reinforcement is formed at the flanges due to their arrangement, besides being located in an offset position in relation to the side edges or corners.⁶⁶

[⁶⁷0011⁶⁸]1⁶⁹ Perpendicularly opposing the above-mentioned flanges, the corresponding sectors have respective notches which will form the locating cavity for the upper flanges when the boxes are stacked.⁷⁰

[⁷¹0012⁷²]1⁷³ In addition, the fronts have an upper bridge provided with a window which are precisely facing the configuration of the flanges corresponding to the corner reinforcements, so that they are located in these front end bridge windows and a perfect anchorage is obtained when the box are stacked on top of one another, resulting in optimum stabilisation and compression strength.⁷⁴

[⁷⁵0013⁷⁶]1⁷⁷ Finally, it should be mentioned that the aforesaid flanges have a semi-hexagonal configuration as opposed to the semi-octagonal configuration of the flanges provided on conventional boxes.⁷⁸

BRIEF⁷⁹ DESCRIPTION OF THE DRAWINGS⁸⁰

[⁸¹ 0014⁸²]⁸³ To supplement the description being given and in order to assist a clearer understanding of the features of the invention, in accordance with a preferred example of a practical embodiment of same, a set of drawings is attached as an integral part of said description wherein for purely illustrative and never restrictive purposes there is represented the following.⁸⁴

~~Figure 1. It shows~~⁸⁵ [⁸⁶ 0015⁸⁷]⁸⁸ Figs. 1A and 1B show⁸⁸ the development corresponding to the parts of a box made in accordance with the improvements of the invention, with ⁸⁹~~half of~~⁹⁰ Fig. 1A depicting⁹¹ the box⁹² ~~being represented~~⁹³ as a one-piece body, ⁹⁴~~while the other half allows it to be seen that~~⁹⁵ and Fig. 1B depicting⁹⁶ the box⁹⁷ ~~would be~~⁹⁸ composed of five separate pieces, the object of the invention being applicable both to one type of box and the other, as the improvements have absolutely no effects on whether the box is composed of a single piece or is made up of five pieces.⁹⁹

~~Figure 2. It shows~~¹⁰⁰ [¹⁰¹ 0016¹⁰²]¹⁰³ Fig. 2 is¹⁰³ a perspective view, according to an intermediate folding stage, of the extension that is going to form the reinforcement corresponding to one of the corners of the box that is the object of the invention.¹⁰⁴

~~Figure 3. It shows~~¹⁰⁵ [¹⁰⁶ 0017¹⁰⁷]¹⁰⁸ Fig. 3 is¹⁰⁸ an upper perspective view of the corner reinforcement obtained from ¹⁰⁹~~figure~~¹¹⁰ Fig.¹¹¹ 2.¹¹²

~~Figure 4. It shows~~¹¹³ [¹¹⁴ 0018¹¹⁵]¹¹⁶ Fig. 4 is¹¹⁶ an upper perspective view of a portion corresponding to a box corner, i.e. comprising part of the bottom, part of the end and part of the side of that corner, as well as the actual reinforcement, at the fully assembled stage.¹¹⁷

~~Figure 5. Its shows~~¹¹⁸ [¹¹⁹ 0019¹²⁰]¹²¹ Fig. 5 is¹²¹ an upper plan view of the corner reinforcement produced in accordance with the object of the invention.¹²²

~~PREFERRED EMBODIMENT~~¹²³ DESCRIPTION OF THE EXEMPLARY EMBODIMENTS¹²⁴
OF THE INVENTION¹²⁵

¹²⁶0020¹²⁷1¹²⁸In the light of the above-mentioned figures it may be observed that the box of the invention, whether produced from a single piece as represented in one of the halves of ¹²⁹~~figure~~¹³⁰Fig.¹³¹ 1 or produced by means of five separate pieces, as is observed in the other half of the same ¹³²~~figure~~¹³³Fig.¹³⁴ 1, comprises a bottom (1), two larger sides (2) and the corresponding ends (3).¹³⁵

¹³⁶0021¹³⁷1¹³⁸Irrespective of the constitution both of the sides (2) and of the ends(3), these present respective end extensions which will determine the corner reinforcements, extensions which, as represented in ¹³⁹~~figures~~¹⁴⁰Figs.¹⁴¹ 1 and 2, are determined on the basis of a transverse folding line (4), the former having the folding lines (5), (6), (7) and (8), all of them transverse, defining respective sectors (9), (10), (11), (12) and (13) which, after suitable folding by means of the aforesaid folding lines, will form the prismatic corner reinforcement, as shown in ¹⁴²~~figure~~¹⁴³Figs.¹⁴⁴ 3, 4 and 5.¹⁴⁵

¹⁴⁶0022¹⁴⁷1¹⁴⁸The sectors (10) and (12-13) have respective flanges (14) and (15), matching up with the upper edge, inasmuch as these same sectors (10) and (12-13), at the lower edge and opposingly to the flanges (14) and (15) present respective complementary recesses or notches (16) y (17).¹⁴⁹

¹⁵⁰0023¹⁵¹1¹⁵²Furthermore, the fronts (3) have an upper bridge (18) extended at each end with overlaps (19) which are attached to the sides (2) of the box when it is assembled.¹⁵³

¹⁵⁴0024¹⁵⁵1¹⁵⁶In the assembly or forming of the box, the first sector (9) of the extensions that are going to make up the reinforcements is attached to the inner face of the respective side (2), while the following sector (10) remains in the diagonal disposition in the corner, while the sector (11) is attached to the inner face of the front (3). For its part, the sector (12) remains in the diagonal disposition in relation to the dihedron formed by the front (3) and the first sector (9), i.e. the corners, that¹⁵⁷ sector (12) being perpendicular to the diagonally disposed sector (10), while sector (13) is attached and superimposed on the inner face of one of the halves of the sector (10), to one side or the other of same.¹⁵⁸

¹⁵⁹0025¹⁶⁰1¹⁶¹In this layout, as is represented in ¹⁶²~~figures~~¹⁶³Figs.¹⁶⁴ 4 and 5, the flange (14) of the sector (10) lies perpendicular to one of the halves of the flange (15) of

the sector (12), while the other half of this flange (15), which belongs to the end sector (13), is attached to the half of the flange (14) of the sector (10), as is represented clearly in ¹⁶⁵~~figure~~¹⁶⁶Fig.¹⁶⁷ 3, although provision should also be made for the aforesaid sector (13) to be able to be attached to the opposite side of the inner face of the sector (12), whereby the sectors that will constitute the upper projections of the corners form a right angle to one another, which is positioned and located in a slotted window (20) provided in each of the end parts of the bridges (18) of the fronts(3), as is represented in ¹⁶⁸~~figure~~¹⁶⁹Fig.¹⁷⁰ 4, it being foreseen that the notches (16) and (17) form a cavity or recess in the bottom of each one of the reinforced corners for the location precisely of the projecting parts of those flanges (14-15), when the boxes are stacked on one another. Obviously, the sectors that are superimposed, whether those that form the reinforcements and those corresponding to the extensions (14) and (15) are glued to one another, forming in any case a sturdy reinforcement in each of the corners and projections or flanges that are likewise compression resistant when stacking.¹⁷¹

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